Article II, Section 30-28 – Definitions

Anemometer: ***An instrument for measuring wind force and velocity.***

Net Metering: ***A program offered by a utility company that allows customers with eligible renewable energy systems to offset a portion of the electric energy provided by the utility.***

Rated Nameplate Capacity: ***The maximum rated output of electric power production equipment specified by the manufacturer.***

Shadow Flicker: ***The visible flicker effect that occurs when rotating turbine blades cast shadows on the ground and nearby structures, causing the repeating pattern of light and shadow.***

Wind Energy: ***Power generated by converting the mechanical energy of wind into electrical energy through use of a wind generator.***

Wind Energy Conversion System: ***An electric generating device, the main purpose of which is to convert the kinetic energy available in the wind to mechanical energy, consisting of one or more wind turbines, a tower, associated control or conversion electronics and other accessory structures and buildings, including substations, electrical infrastructure, transmission lines and other appurtenant structures and facilities.***

Wind Energy System, Large: ***A wind energy conversion system consisting of one or more wind turbines, towers and associated control or conversion electronics, having a rated nameplate capacity of not more than 999 kilowatts (kW). For purposes of non-residential net metering, Virginia Code §56-594B limits the electrical generating facility to a capacity of not more than 500 kilowatts (kW).***

Wind Energy System, Micro (Building Integrated): ***A building-mounted wind energy conversion system that has a manufacturer's rating of 10 kW or less.***

Wind Energy System, Small: ***A wind energy conversion system consisting of a single wind turbine, a tower, and associated control or conversion electronics, having a rated nameplate capacity of not more than 50 kilowatts (kW) for residential uses and not more than 100 kW for other uses. For the purpose of residential net metering, Virginia Code §56-594B limits the electrical generating facility to a capacity of not more than 10 kilowatts (kW).***

Wind Energy System, Utility: ***A wind energy conversion system consisting of more than one wind turbine, towers and associated control or conversion electronics, having a rated nameplate capacity of 1 megawatt (MW) or greater.***

Wind Energy Tower: ***The structure on which the wind turbine is mounted.***

Wind Monitoring or Temporary Meteorological Tower: ***A temporary tower equipped with devices to measure wind speeds and direction; used to determine how much wind power a site can be expected to generate.***

Wind Turbine: ***A wind energy conversion device that converts wind energy into electricity through use of a wind turbine generator; typically having one, two or three blades, nacelle, rotor, generator, controller and associated mechanical and electrical conversion components mounted on top of a tower.***

Windmill: ***A machine designed to convert the energy of the wind into more useful forms of energy, such as grinding, pumping, etc., using rotating blades driven by the force of the wind to turn mechanical equipment to do physical work, without producing energy.***

Article III – District Regulations

SEC. 30-32. - AG-3 AGRICULTURAL/RURAL PRESERVE DISTRICT.

Sec. 30-32-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

5. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-33. - AG-1 AGRICULTURAL/RURAL LOW DENSITY DISTRICT.

Sec. 30-33-2. - Permitted Uses.

(A) Permitted By Right

5. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

6. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-34. - AR AGRICULTURAL/RESIDENTIAL DISTRICT.

Sec. 30-34-2. - Permitted Uses.

(A) Permitted By Right

5. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-36. - AV AGRICULTURAL/VILLAGE CENTER DISTRICT.

Sec. 30-36-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-41. - R-1 LOW DENSITY RESIDENTIAL DISTRICT.

Sec. 30-41-2. - Permitted uses.

(A) Permitted By Right

4. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-42. - R-2 MEDIUM DENSITY RESIDENTIAL DISTRICT.

Sec. 30-42-2. - Permitted Uses.

(A) Permitted By Right

3. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-45. - R-3 MEDIUM DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT.

Sec. 30-45-2. - Permitted Uses.

(A) Permitted By Right

4. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-46. - R-4 HIGH DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT.

Sec. 30-46-2. - Permitted Uses.

(A) Permitted By Right

4. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-47. - PRD PLANNED RESIDENTIAL DEVELOPMENT DISTRICT.

Sec. 30-47-2. - Permitted Uses.

(A) Permitted By Right

5. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-61. - I-1 LOW INTENSITY INDUSTRIAL DISTRICT.

Sec. 30-61-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

3. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-62. - I-2 HIGH INTENSITY INDUSTRIAL DISTRICT.

Sec. 30-62-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

4. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-63. - PTD PLANNED TECHNOLOGY DEVELOPMENT DISTRICT.

Sec. 30-63-2. - Permitted Uses.

(A) All of the residential, civic, office, commercial, industrial and miscellaneous use types listed in article II of this ordinance are permitted in the PTD district. Residential use types shall be limited to no more than fifteen (15) percent of the total gross square footage. No use shall be permitted except in conformity with the uses specifically included in the final master plan.

SEC. 30-71. - EXPLORE PARK DISTRICT.*

Sec. 30-71-3. - Permitted Uses.

(A) Permitted By Right

4. *Miscellaneous Uses*

Wind Energy System, Small*

Article IV – Use and Design Standards

SECTION 30-87-6. Wind Energy System, Small

(A) General Standards:

***Type of Tower**: The tower component of any small wind energy system shall be one that is recommended and certified by the manufacturer. Monopole and lattice towers are the preferred type of support for wind turbines.*

***Tower Color:** Small wind energy system towers shall maintain a galvanized steel finish, unless Federal Aviation Agency (FAA) standards require otherwise. The zoning administrator may allow a property owner, who is attempting to conform the tower to the surrounding environment and architecture, to paint the tower to reduce its visual obtrusiveness. A photo simulation may be required by the zoning administrator.*

***Number of Towers**: More than one tower may be permitted on a individual piece of property provided that all setback requirements have been met.*

***Noise**: The wind energy system shall not exceed 60 decibels (dBA), as measured at the closest property line, except during short-term events such as severe windstorms.*

***Lighting**: No lighting shall be incorporated on the tower or wind turbine unless required by the Federal Aviation Administration (FAA) or other appropriate authority.*

***Advertising**: Signs, writing, pictures, flags, streamers, or other decorative items that may be construed as advertising are prohibited on wind energy systems, except as follows:*

a) *Manufacturer's or installer's identification on the wind turbine, and*

b) *Appropriate warning signs and placards.*

***Shadowing and Shadow Flicker**. A small wind energy system shall be sited in a manner that does not result in significant shadowing or shadow flicker impacts. The applicant has the burden of proving that this effect does not have significant adverse impact on neighboring or adjacent uses either through siting or mitigation.*

***Speed Controls**. A small wind energy system shall be equipped with manual (electronic or mechanical) and automatic overspeed controls to limit the blade rotation speed to within the design limits of the small wind energy system.*

***Clearing**: Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the small wind energy system and is otherwise prescribed by applicable law, regulations, and ordinances.*

***Removal of Defective or Abandoned Wind Energy Systems**: Small wind energy systems shall comply with the following:*

a) *Any wind energy system found to be unsafe by the building official shall be repaired by the owner to meet federal, state and local safety standards or removed within ninety (90) days.*

b) *Any wind energy system for which electricity is not generated for a continuous period of twenty-four (24) months shall be considered abandoned, and the owner of the system shall remove the turbine within six (6) months of receipt of notice from the County instructing the owner to remove the abandoned wind energy system.*

***Wind Monitoring or Temporary Meteorological Towers**: Small wind energy systems shall comply with the following:*

a) *A wind monitoring meteorological tower with an anemometer and other wind measuring devices may be installed with the issuance of a zoning permit for the purpose of monitoring wind and other environmental conditions relevant to siting wind energy systems and used to determine how much wind power a site can be expected to generate. The zoning permit shall be valid for a period of one year.*

b) *No wind monitoring meteorological tower for small wind energy systems may rise more than the allowable height of the proposed wind energy system.*

SECTION 30-87-7. Wind Energy System, Large; and Wind Energy System, Utility

(A) General Standards:

<u>Removal of Defective or Abandoned Wind Energy Systems</u>: Large or utility wind energy systems shall comply with the following:

- ***a) Any wind energy system found to be unsafe by the building official shall be repaired by the owner to meet federal, state and local safety standards or removed within ninety (90) days.***
- ***b) Any wind energy system for which electricity is not generated for a continuous period of twenty-four (24) months shall be considered abandoned, and the owner of the system shall remove the turbine within six (6) months of receipt of notice from the County instructing the owner to remove the abandoned wind energy system. In accordance with Section 30-21 of the Roanoke County Zoning Ordinance.***
- ***c) Decommissioning plans shall be submitted as part of the application for any wind energy system that describes the anticipated life of the wind power project, the estimated decommissioning costs in current dollars and the anticipated manner in which the wind power project will be decommissioned and the site restored.***
- ***d) Decommissioning shall include removal of wind turbines, buildings, cabling, electrical components, roads, and any other associated facilities.***
- ***e) Disturbed earth shall be graded and re-seeded, unless the landowner requests in writing that the access roads or other land surface areas not be restored.***
- ***f) A performance surety, in a form approved by the County Attorney, shall be submitted by the applicant prior to the issuance of a building permit in order to ensure removal of the wind energy facility when it is no longer to be used for wind generation.***

SECTION 30-88. Accessory Uses and Structures

(A) As defined in section 30-28, accessory uses and structures may be commonly found and associated with principal use types. Principal uses which are allowed by right or by special use may include accessory uses and activities, provided such accessory uses and activities are appropriate and incidental to the principal use, and provided they are designed and located in accord with the intent and provisions of this ordinance.

Sec. 30-88-1. Accessory Uses: Agricultural Use Types.

(A) Agricultural use types may include the following accessory uses, activities or structures on the same site or lot:

5. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-2. Accessory Uses: Residential Use Types.

(A) Residential use types may include the following accessory uses, activities or structures on the same site or lot:

8. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-3. Accessory Uses: Civic Use Types.

(A) Civic use types may include the following accessory uses, activities or structures on the same site or lot:

7. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-4. Accessory Uses: Office Use Types.

(A) Office use types may include the following accessory uses, activities or structures on the same site or lot:

7. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-5. Accessory Uses: Commercial Use Types.

(A) Commercial use types may include the following accessory uses, activities or structures on the same site or lot:

6. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-6. Accessory Uses: Industrial Use Types.

(A) Industrial use types may include the following accessory uses, activities or structures on the same site or lot:

9. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.